

***Amendments to the Claims:***

This listing of claims will replace all prior versions, and listings, of claims in the application:

***Listing of Claims:***

1. (Currently Amended) An apparatus for freezing a biological sample in a flexible container ~~while moving along a longitudinal axis of the apparatus, the container having a first container dimension perpendicular to the axis, a second container dimension parallel to the axis, and a container thickness, the first container dimension being defined by the maximum level which said sample may have along the first container dimension, the apparatus comprising:~~

[(a)] a cooling axis;

at least one set of two cooling plates with inner surfaces positioned along the cooling axis, each at least one set of two cooling plates comprising having a first longitudinal plate dimension perpendicular to the cooling axis, and a second horizontal plate dimension parallel to the cooling axis; , defining therebetween

a passage defined between the inner surfaces of the plates, the passage comprising

an inner whose width that conforms corresponds to an outer width of the container, and

~~a height no larger than the first longitudinal plate dimension thickness and which is no larger than said first plate dimension, the first plate dimension being at least as large as the level of the biological sample along first container dimension; and~~

~~[(b)] a motion unit adapted to move for movement of the container through the said passage along the cooling axis such that so as to allow cooling of the sample by is cooled by conduction from direct contact between the container and the inner surfaces of the plates.~~

2. (Currently Amended) ~~[[An]] The~~ apparatus according to claim 1, wherein the plates are oriented vertically, ~~the first plate dimension being the height.~~

3. (Currently Amended) ~~[[An]] The~~ apparatus according to claim 1, wherein the plates are oriented horizontally, ~~the first plate dimension being the width.~~

4. (Currently Amended) ~~[[An]] The~~ apparatus according to claim 1, wherein the inner surfaces of the plates are parallel to side walls of the containers, ~~the inner surfaces being designed so to allow said movement and said cooling.~~

5. (Currently Amended) ~~[[An]] The~~ apparatus according to claim 1, further comprising a retention device adapted to hold the container.

6. (Currently Amended) [[An]] The apparatus according to claim 1, further comprising ~~more than one~~ two or more sets set of cooling plates arranged along the cooling axis adjacent to each other, wherein at least two of adjacent sets are separated by a gap.

7. (Currently Amended) [[An]] The apparatus according to claim 1, wherein the cooling plates comprise at least one channel adapted for flow of a cryogenic fluid therethrough.

8. (Currently Amended) [[An]] The apparatus according to claim 7, wherein the cryogenic fluid comprises includes liquid nitrogen.

9. (Currently Amended) [[An]] The apparatus according to claim 1, ~~wherein at least one freezing parameter is controlled by a feedback control system adapted to control at least one freezing parameter.~~

10. (Currently Amended) [[An]] The apparatus according to claim 9, further comprising a heating arrangement associated with the said cooling plates.

11. (Currently Amended) [[An]] The apparatus according to claim 10, wherein the heating arrangement comprises at least one electric resistance heater.

12. (Currently Amended) [[An]] The apparatus according to claim 9, wherein the feedback control system comprises temperature sensors.

13. (Currently Amended) [[An]] The apparatus according to claim 9, wherein the feedback control system comprises a processor.

14. (Currently Amended) [[An]] The apparatus according to claim 13, wherein the processor is capable of controlling at least one of ~~the list including~~ flow of cryogenic fluid, pressure of the cryogenic fluid, heating arrangement, and the motion unit.

15. (Currently Amended) [[An]] The apparatus according to claim 1, further comprising a monitoring means.

16. (Currently Amended) [[An]] The apparatus according to claim 15, wherein the monitoring means comprises a video camera.

17. (Currently Amended) [[An]] The apparatus according to claim 15, wherein the monitoring means comprises a device capable of taking a temperature measurement of the biological sample during freezing.

18. (Currently Amended) [[An]] The apparatus according to claim 17, wherein the device is an infrared thermograph.

19. (Currently Amended) [[An]] The apparatus according to claim 1, ~~the~~ apparatus further comprising a first chamber adapted to receive the container, a second chamber adapted to perform the freezing, and a third chamber adapted for removal ~~therefrom~~ of

the container after freezing, the said chambers constituting at least a portion of the passage.

20. (Currently Amended) [[An]] The apparatus according to claim 19, adapted to initiate the freezing within the first chamber.

21. (Currently Amended) [[An]] The apparatus according to claim 1, adapted to initiate the freezing external to the passage.

22. (Currently Amended) [[An]] The apparatus according to claim 21, further adapted to initiate the freezing in an area of the container and to introduce the container into the passage after the initiation, wherein during the initiation the container is disposed such that the area is near the top thereof, and during introduction into the passage the area is near the front thereof in the direction of the movement.

23. (Currently Amended) [[An]] The apparatus according to claim 19, wherein the third chamber is adapted to cool the container to a temperature which is below that achieved as a result of freezing.

24. (Currently Amended) An apparatus according to claim 1, wherein the cooling axis is disposed vertically.

25. (Currently Amended) An apparatus according to claim 24, further adapted to initiate the freezing internal to the passage, and adapted for movement of the container ~~the movement taking place~~ from a lower portion of the passage to a higher portion of the passage.

26. (Currently Amended) A method of cooling a biological sample, the method comprising:

- (a) providing [[an]] the apparatus according to claim 1;
- (b) inserting therein a container containing a biological sample into the apparatus;
- (c) providing a predetermined temperature gradient along the cooling axis; and
- (d) moving the container through the passage along the cooling axis.

27-43. (Cancelled)

44. (New) The apparatus according to claim 1, wherein when the container is in the apparatus, the biological sample is disposed in the container such that the biological sample remains below the height of the passage.

45. (New) The apparatus according to claim 1, wherein the biological sample comprises red blood cells.

46. (New) The apparatus according to claim 1, wherein the container is a blood bag.

47. (New) The apparatus according to claim 1, wherein the container has a length twenty times larger than the width of the container.